nologist in training for an effective grounding in Nuclear Medicine.

A few additions to this half of the book would be helpful. Very little is said about the steadily expanding and rather complex realm of radiopharmacy, even though the Nuclear Medicine technologist today must have an increasing degree of sophistication in his knowledge of specific radiopharmaceuticals, their principles of action and utilization, etc. Related to this, an expanded discussion of generators would be helpful, including the equilibration curve following generator elution which plays a major role in decisions on repeated elutions of a given generator. In all likelihood we will see a progressively increasing use of generators in the average Nuclear Medicine Laboratory. Also helpful for general background in the area of radiobiology and radiation protection would be a greater emphasis on the role of beta particles in the radiation risk from a given isotope, rather than gamma emissions, and a chart of commonly used radioisotopes and radiopharmaceuticals documenting the radiation delivered to whole body and critical organ by a standard adult dose. Particular omissions in the area of radiation detection instruments include the absence of mention of positron imaging with the scintillation camera, a modality of imaging which should become increasingly important in the future both for its tomographic capabilities and for the fact that external collimation is eliminated; and the total absence of any mention of whole body counters as useful and relatively widely available instruments for certain routine and investigative radioisotopic procedures. Nevertheless, this first half of the text entitled "Nuclear Science" is one of the best basic backgrounds currently available to the training technologist, as well as resident or fellow in Nuclear Medicine.

Unfortunately, the second half of the text entitled "Clinical Nuclear Medicine" falls considerably short of what would be ideal or even optimal in such a book. Individual chapters on specific organs or systems elaborate initially on anatomy and physiology which is helpful to the person with a minimal biologic background, then progress to rather abbreviated descriptions of radioisotopic procedures in current use. Almost every important organ or metabolic study currently available is touched upon to some degree, and in this regard provides a relatively comprehensive background for a training technologist. However, descriptions of procedures are often too abbreviated, with minimal discussion of specific technical details which might otherwise make the book important as a reference source for procedure technique.

In red blood cell survival studies, for example, no comment is made upon spleen-liver ratio counting and the significance of the numbers obtained. No technical comments are made upon the problems of external organ localization and repeated counting in a ferrokinetic study, nor upon the importance of adequate probe shielding in such a study where a lightly shielded probe could introduce considerable extraneous counting activity. Simplifying the ferrokinetic red cell incorporation study by using the fifteen minute post-injection blood sample as the 100 percent starting level introduces an error of ten percent or more with a plasma disappearance half time of ninety minutes. No mention is made in spleen imaging of what has now become the commonest spleen label, $^{99m}$Tc sulphur colloid, one which need be replaced by other radiopharmaceuticals only when the spleen is obscured by extensive hepatic enlargement. No mention is made of the use of $^{18}$F as a bone scanning agent, a tracer which will find increasing use in the future, and brief mention of $^{133}$Xenon as an inhalation and perfusion lung tracer gives little information which would be helpful to a technologist beginning to undertake such studies, now becoming increasingly widespread. Although the authors describe choroid plexus labeling as a problem in brain imaging with $^{99m}$Tc pertechnetate, no mention is made of the use of iodides nor perchlorate as effective methods of blocking this labeling.

The chapter on renal imaging discusses scintillation camera usage only briefly, a fault noted repeatedly throughout the clinical section of the book, even going so far as to include an illustration of a $^{99m}$Tc pertechnetate renal blood flow study which is improperly referred to in the text and not expanded upon. Many sections would benefit from additional examples in the form of illustrations, such as comparisons of normal and abnormal Hippuran renograms, illustrations of one or two positive bone scans, comment upon cardiac blood flow studies for the assessment of pericardial effusions and subphrenic abscesses, etc. Additional comment might also be made upon newer techniques which will gain wider usage such as bone marrow imaging with radiocolloids, joint imaging with $^{99m}$Tc pertechnetate, similar imaging of abscesses which can also be effected with $^{131}$I-RISA, double isotope procedures such as combined liver and lung imaging for subphrenic abscess, etc. Many good illustrations are included of normal and abnormal studies both by rectilinear scanner and less frequently scintillation camera in the major organs of interest, however. The clinical section does give a good general background for the person new to the field, if not very helpful in the expansion of technical details and discussion of varieties of abnormals. The glossary at the end of the clinical section seems particularly irrelevant to the training technologist, and the list of radionuclides in common use noted in the appendices overlooks some important isotopes such as $^{14}$Carbon, $^{55}$Iron, $^{22}$Sodium, $^{85}$Krypton (instead of $^{79}$Krypton), etc.

The overall impression one gets from the book is of a very good nuclear science section, developing the physics and instrumentation background quite effectively for the training technologist, but a very average clinical section which would require quite extensive supplementation in specific organ areas. In this regard, a more extensive bibliography subdivided by organ or system would be helpful. Nevertheless, the book should be very useful to any technologist training program for its many assets in spite of the shortcomings described.

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**CLINICAL AIDS IN CARDIAC DIAGNOSIS**—William Dressler, M.D., Consultant in Medicine, Maimonides Hospital Medical Center, Brooklyn; Consultant Cardiologist, Veterans Administration Hospital, Brooklyn. Grune & Stratton, Inc., 381 Park Avenue South, New York, N.Y. (10016), 1970. 246 pages, $12.75.

William Dressler book on physical signs in cardiac disease represents a "cri du coeur" of an "old fashioned" physician. It will be echoed by many in the field who decry the devaluation of the history and physical examination in patients with heart disease. Angina pectoris is not diagnosed by an electrocardiograph and/or even a coronary angiograph. The book presents the author's personal experience, involving the history, physical signs, electrocardiographs, phonocardiographs and apexcardiographs often in specific patients. The amount of detail given makes the book too meaty for medical students. It is perhaps more suitable for trainees or fellows in cardiology. The illustrations are numerous and of high quality with excellent legends. A greater emphasis on radiology to the exclusion of much of the section on percussion might improve the balance of the book.

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